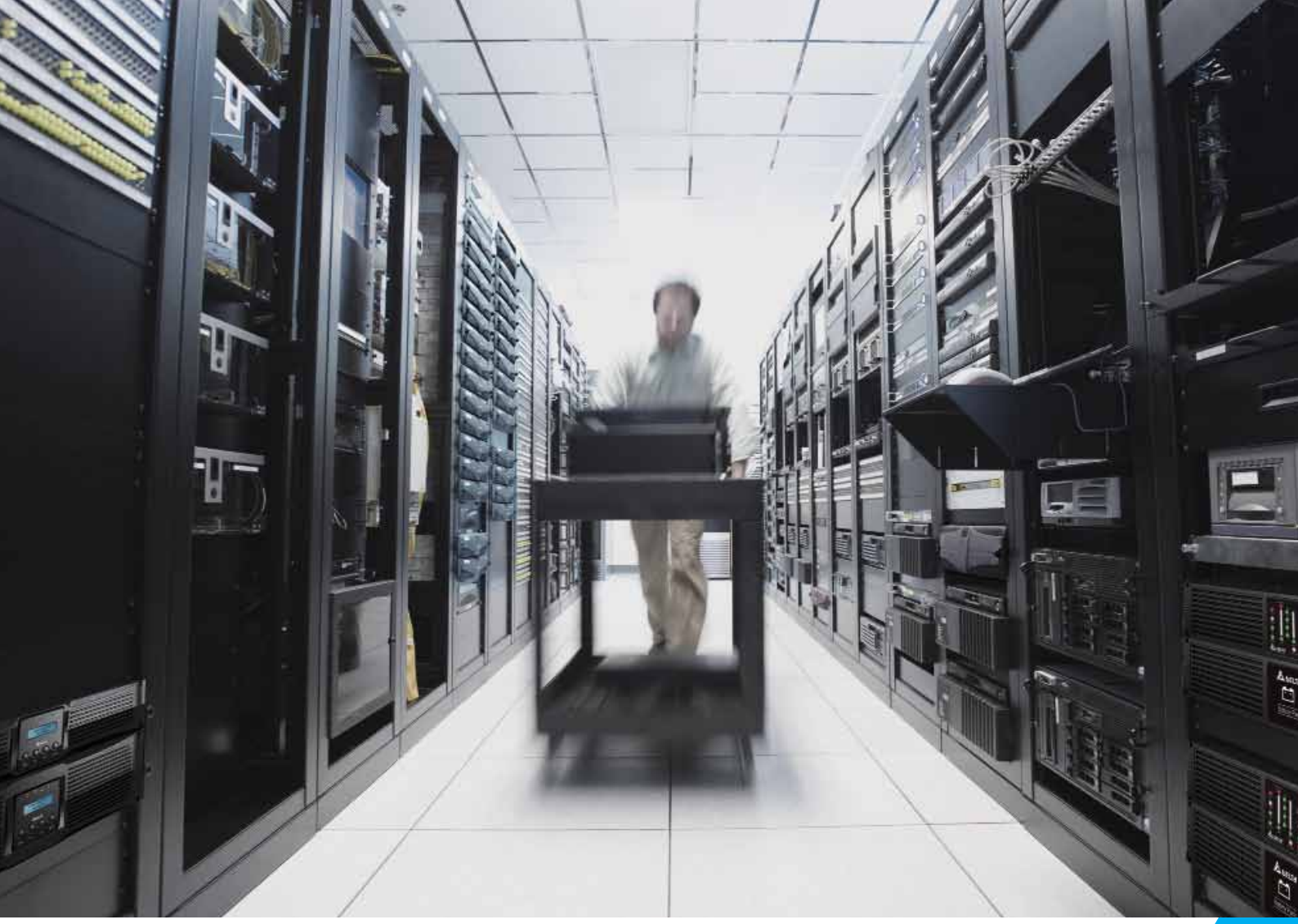


The power behind competitiveness

Delta InfraSuite

Data Center Infrastructure Solutions

www.deltapowersolutions.com

DELTA

Smarter. Greener. Together.

Delta InfraSuite

Data Center Infrastructure Solutions

Enterprise growth and IT equipment have become so closely linked that planning and building a high performance data room is one of the critical issues for IT managers today.

With 40 years of leadership in the core technologies of power electronics, the expert teams at Delta Electronics have developed a new generation of data center infrastructure solutions: InfraSuite.

Delta InfraSuite includes power system, rack & accessories, precision cooling, and environment management system.

Power Management
Integrated power distribution for optimal power management
Rack & Accessories
Smart, modular design for optimizing space utilization
InfraSuite
Fully integrated design and scalable system architecture
Precision Cooling
Highly efficient, energy-saving temperature control
Environment Management System
Have the entire data center at your fingertips

2007~ 2008 Forbes Asia's Fabulous 50

2009 Frost & Sullivan Green Excellence Award for Corporate Leadership

Delta's Manufacturing System is Certified by ISO 9001 and ISO 14001 Standards

IECQ Certificate of Hazardous Substance Process Management

Delta InfraSuite Products and Services

InfraSuite advantages include:

- Modular design for quick and easy assembly
- Scalability to match data center with enterprise growth
- Optimized installation and operation costs
- High efficiency, energy-saving power components for eco-friendly data rooms
- Easy integration with all data room structures
- A complete environment management system for worry-free operations

Power Management

❶ UPS

❷ Power Distribution Cabinet

❸ Power Distribution Unit

❹ Static Transfer Switch

Rack & Accessories

❺ Modular Server Rack

❻ Rack Accessories

Management System

❼ InfraSuite Manager

❽ EnviroStation

❾ EnviroProbe

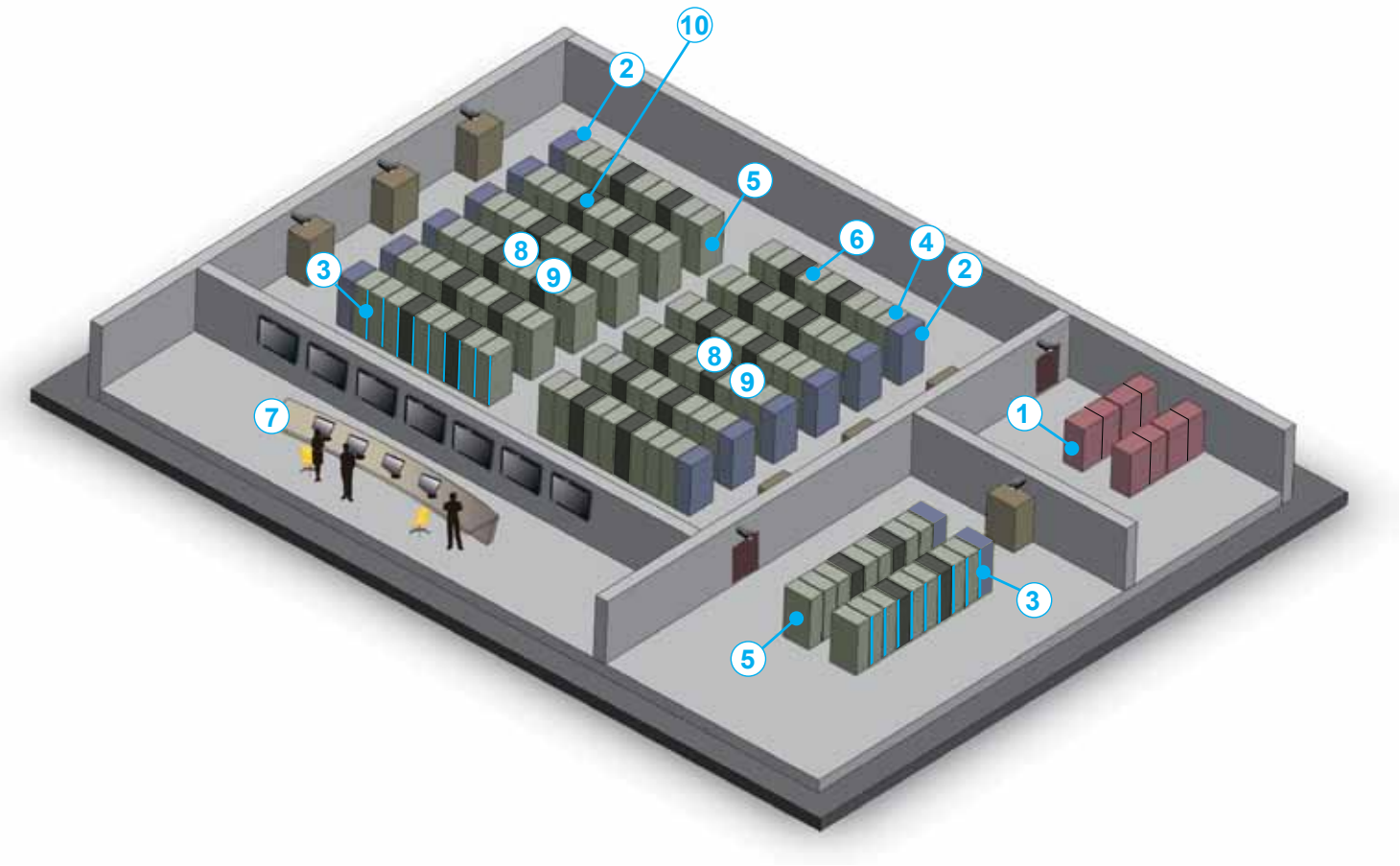
Precision Cooling

❿ RowCool

Service

System Design and Planning

Rapid and Comprehensive Services



Delta InfraSuite Power Management

Uninterruptible Power Supply, Modulon DPH Series

The Modulon DPH supports ultimate availability for datacenter operations and provides the benefit of “pay as you go” without over-sizing the UPS. While achieving ultimate availability, the Modulon DPH does not compromise on power efficiency performance. When availability, efficiency and expanding according to business needs are essential, the Modulon DPH is the ideal UPS system to provide power protection and total cost of ownership (TCO) savings.

Ultimate Availability

- Advanced fault tolerance design achieved by self redundancy to guarantee operation continuity
- Self-synchronization of power and control modules for continuous on-line operation even in the event of control module failure to avoid downtime caused by single point failure
- Hot-swappable key modules and components to ensure Mean Time To Repair (MTTR) close to zero without downtime risk

High Scalability

- Vertical expansion from 25kW to 200kW supporting N+X redundancy in a single rack enclosure to save footprint
- Parallel expansion up to four units without requiring additional hardware
- Variable configurations possible providing the scalable flexibility up to Tier 4 level

Excellent Power Performance and Efficiency

- Full rated power (kVA=kW) to maximize power availability
- High operating efficiency of 95% at 30% light load and 96% from 50% load resulting in marked energy cost savings
- Low harmonic pollution (iTHD<3%) to reduce upstream investment costs and meet demanding power requirements

Easy Maintenance

- Built-in manual bypass features to eliminate maintenance-related downtime
- Proactive detection of fan failure and switch fault for early diagnosis on UPS malfunction
- Plug and play modularity to simplify the maintenance process

Technical Specifications

Model		DPH-25K	DPH-50K	DPH-75K	DPH-100K	DPH-125K	DPH-150K	DPH-175K	DPH-200K
Power Rating (kVA)		25	50	75	100	125	150	175	200
Power Rating (kW)		25	50	75	100	125	150	175	200
Input	Nominal Voltage	380/220V, 400/230V, 415/240V (3 phase, 4-wire +G)							
	Voltage Range	176~276 / 305~477 Vac *							
	Current Harmonic Distortion	<3% **							
	Power Factor	> 0.99							
	Frequency	50/60 Hz							
Output	Voltage	380/220V, 400/230V, 415/240V (3 phase, 4-wire +G)							
	Output Power Factor	1 (kVA = kW)							
	Voltage Harmonic Distortion	≤ 2% (linear load)							
	Voltage Regulation	±1% (static)							
	Frequency	50 or 60 Hz							
	Frequency Regulation	±0.05 Hz							
	Overload Capacity	≤ 125%: 10 minutes; ≤ 150%: 1 minute							
Interface	Standard	Parallel port x 2, Smart slot x 2, Dry contact output x 6, Dry contact input x 6, SNMP card x 2, Battery dry contact x 6, SNMP card IPv6, ModBus card, Relay I/O control card,							
	Optional	EnviroProbe, Battery cabinet temperature sensor, Battery cabinet status cable							
Conformance	Safety & EMC	CE, EN62040-1							
Other Features	Parallel Redundancy and Expansion	Module and system redundancy; Maximum 4 units up to 800 kW							
	Emergency Power Off	Local and remote							
	Battery start	Yes							
	Event Log	3000 records							
	External Battery Cabinet	Optional							
Efficiency	AC-AC	96%							
	ECO Mode	99%							
Environment	Operating Temperature	0 ~ 40 ºC							
	Relative Humidity	0 ~ 90% (non-condensing)							
	Audible Noise (at one meter)	<59 dBA	<59 dBA	<60 dBA	<60 dBA	<61 dBA	<61 dBA	<62 dBA	<62 dBA
Physical	Dimensions (WxDxH)	600 x 1090 x 2000 mm							
	Weight (kg)	382	414	446	478	510	542	574	606

* When input voltage is 140/242~176/305 Vac, the sustainable loading is from 60% to 100% of the UPS capacity.
** When input harmonic distortion is less than 1%.
All specifications are subject to change without prior notice.

Control and LCD Display Panel

Scalable and Hot-swappable

The Modulon DPH is designed in modern IT aesthetics aligned with Delta InfraSuite datacenter solutions.

Delta InfraSuite Power Management

Power Distribution Cabinet

For power distribution requirements of medium to large data centers, Delta's Power Distribution Cabinet (PDC) provides an optimal solution. The space-saving PDC is easy to move and adapt to future reconfigurations of the data center. The PDC offers superior power protection and monitoring, and the flexibility & scalability to match your actual power distribution requirements. Not only does it improve availability, it reduces the cost of your initial investment.

Convenience

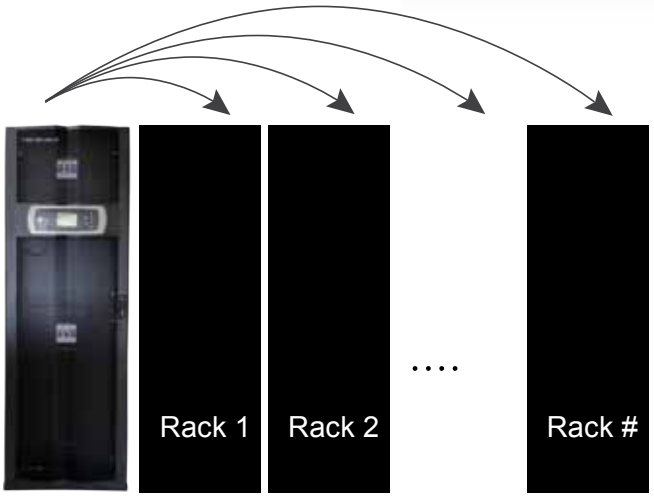
- Configurable circuit breaker panel
- LCD display supporting multiple languages
- Recording more than 500 event logs
- Monitoring the current of each branch circuit breaker
- Built-in RS232 interface for remote monitoring
- Six built-in contact closure outputs
- Two built-in SNMP interfaces increasing availability

Safety

- Local and remote emergency power off functions
- Current unbalance and phase sequence error alarm
- Optional K-factor isolation transformer enhancing safety and reduces harmonics
- Optional lightning surge protection module

Availability

- Easy to relocate, reducing investment costs
- Two built-in sets of panelboards with 42 poles each
- Optional transformers for different output voltages
- Hot-swappable output breaker



▲ Scalable and configurable for present and future demands

Technical Specifications

Model		PDC 80	PDC 125
Capacity		80 kVA	125 kVA
Input	Rated voltage Voltage tolerance range Frequency	220/380 Vac, 3 phase 3 wire+ ground, or 3 phase 4 wire+ ground ±15% 50 / 60 Hz ±5% (Automatic detection)	
Output	Rated voltage	220/380 Vac, 3 phase 4 wire+ ground	
	Total switching capacity	Based on actual product specifications	
	Panelboard type	Two sets of panelboards with 42 poles each	
	Shunt switch type	Hot-swap switch capacity: 15 / 20 / 30A, Optional: 1/2/3 pole	
Transformer	Input-Output Type	Δ-Y	
	Efficiency	97.5% (Full-load)	
LCD Display	System	Temperature, ground current, system overheat alarm, V-Loss alarm, voltage imbalance alarm, ground fault alarm	
Blue light 4.9” graphic interface	Input	Phase voltage, line voltage, phase current, line current, load(%), iTHD, total kVA, total kW, total kWh, Over voltage/over current alarm, under-voltage/under current alarm, Over line current alarm, iTHD abnormal alarm	
	Total output	Phase voltage, line voltage, phase current, line current, frequency, neutral current, load(%), kVA, kW, kWh, power factor, VTHD, iTHD, Over voltage/over current alarm, under-voltage/under current alarm, Over line current alarm, iTHD abnormal alarm, VTHD abnormal alarm, power factor abnormal alarm	
	Output shunt plate	Phase current, kVA, kW, kWh, load (%), iTHD, power factor, line current, over current alarm, under current alarm, Over line current alarm, iTHD abnormal alarm, power factor abnormal alarm	
	Output shunt	Current, load (%), over current alarm, under current alarm	
	Temperature	Environment (instant and alarm), transformers (two stage-alarm)	
Conformance	Environment	CE	
	Electromagnetic interference	EN55022	
Communication interface		RS232 x 1, dry contact x 6, SNMP slot x 2	
Optional accessories		Lightning protector	
Dimensions (WxDxH)		600 x 1090 x 2000mm (standard 19”cabinet)	
Weight		Excluding transformer: 225kg, Including H transformer: 80kVA: 525 kg, 125 kVA: 630 kg	

These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

Delta InfraSuite Power Management

Power Distribution Unit

Delta's power distribution units (PDU) provide optimal power distribution for devices inside a rack. In addition to easily distributing power to equipment, PDUs also provide complete power protection. Delta offers a range of basic and metered PDUs that you can install vertically or horizontally inside a rack. It makes establishing a data center more efficient.

LED Current Display and Indicators

Technical Specifications

Model	Input Phase	Plug Type	Cable Length	Nominal Input Voltage (Vac)	Input Voltage Range	Rating Current per Input (A)	Output Voltage / Phase
PDU1113	1	NEMA L5-30P	2.4m	110/120	± 10 %	24	100-120 Vac / 1
PDU1213	1	NEMA L6-30P	2.4m	208/220	± 10 %	24	200-240 Vac / 1
PDU1311	1	IEC309-16A-3W	2.4m	230/240	± 10 %	16	200-240 Vac / 1
PDU1315	1	IEC309-32A-3W	2.4m	230/240	± 10 %	32	200-240 Vac / 1
PDU1425	3Y	IEC309-32A-5W	1.8m	220/380 230/400	± 10 %	32	200-240 Vac / 1
PDU2421	3Y	IEC309-16A-5W	1.8m	220/380 230/400	± 10 %	16	200-240 Vac / 1
PDU2525	3 Δ	CS8365C	2.4m	208/220	± 10 %	32	200-240 Vac / 1
PDU5113	1	NEMA L5-30P	2.4m	110/120	± 10 %	24	100-120 Vac / 1
PDU5213	1	NEMA L6-30P	2.4m	208/220	± 10 %	24	200-240 Vac / 1
PDU5315	1	IEC309-32A-3W	2.4m	220/230/240	± 10 %	32	200-240 Vac / 1
PDU7111	1	NEMA L5-20P	2.4m	110/120	± 10 %	16	100-120 Vac / 1
PDU7211	1	NEMA L6-20P	2.4m	208/220	± 10 %	16	200-240 Vac / 1
PDU7311	1	IEC309-16A-3W	2.4m	220/230/240	± 10 %	16	200-240 Vac / 1
PDU7425	3Y	IEC309-32A-5W	2.4m	220/380/230/400	± 10 %	32	200-240 Vac / 1

Metered PDU

Availability

- Tool-less installation in Delta's standard rack cabinets
- Brackets included for mounting in other brands' rack cabinets
- Zero-U installation saving valuable rack space
- Single or three phase input voltage available

Safety

- LED current (rms value) display and overload warning indicator
- Branch circuit breaker protection
- International standards of cables and power plugs/ receptacle

Management

- Upgradable firmware for maintaining optimal function
- Integrated with the InfraSuite management software
- Optional SNMP card for remote monitoring

Basic PDU

Availability

- Tool-less installation in Delta's standard rack cabinets
- Brackets included for mounting in other brands' rack cabinets
- Vertical or horizontal mounting method, saving valuable rack space
- Single phase or three phase input voltage available

Safety

- Branch circuit breaker protection
- International standards of cables and power plugs/ receptacle

Interface

Interface	Function
RS232-1	Connect to a PC for remote operation or a firmware upgrade
RS232-2	Connect to an SNMP card or to another PDU

Number of Output Circuit Breakers	Outputs (Number)	Conformance	LED	Communication Interface	Dimensions (WxHxD)	Weight
20A/2P Two (UL489)	NEMA 5-15/20R (24)	UL/cUL, FCC	Yes	RS232-1, RS232-2	48x1250x50/90 mm	5.34kg
20A/2P Two (UL489)	IEC320 C13 (24)	UL/cUL, FCC	Yes	RS232-1, RS232-2	48x1250x50/90 mm	5.24kg
20A/2P One (UL489)	EC320 C19 (3) IEC320 C13 (24)	CE, CCC	Yes	RS232-1, RS232-2	48x1250x50/90 mm	4.56kg
20A/2P Two (UL489)	EC320 C19 (3) IEC320 C13 (24)	CE, CCC	Yes	RS232-1, RS232-2	48x1250x50/90 mm	5.44kg
35A/2P Three (UL489)	IEC320 C19 (9) IEC320 C13 (3)	CE, CCC	Yes	RS232-1, RS232-2	48x1250x50/100 mm	6.45kg
20A/2P Three (UL489)	EC320 C19 (3) IEC320 C13 (36)	CE, CCC	Yes	RS232-1, RS232-2	48x1560x50/90 mm	6.06kg
20A/2P Three (UL489)	IEC320 C13 (36)	UL/cUL, FCC	Yes	RS232-1, RS232-2	48x1560x50/100 mm	8kg
20A/1P Two (UL489)	NEMA 5-15/20R (24)	UL/cUL	X	X	48x1250x50/90 mm	4.88kg
20A/2P Two (UL489)	IEC320 C13 (24)	UL/cUL	X	X	48x1250x50/90 mm	4.92kg
20A/1P Two	IEC320 C19 (4) IEC320 C13 (24)	CE, CCC	X	X	48x1250x50/90 mm	4.90kg
20A/1P One	NEMA 5-15/20R (8)	UL/cUL	X	X	440x44x55 mm	1.56kg
20A/1P One	IEC320 C13 (12)	UL/cUL	X	X	440x44x55 mm	1.64kg
20A/1P One	IEC320 C13 (12)	CE, CCC	X	X	440x44x55 mm	1.48kg
20A/1P Six	IEC320 C19 (6)	CE, CCC	X	X	440x44x250 mm	4.80kg

Delta InfraSuite Power Management

Static Transfer Switch Series

The Static Transfer Switch (STS) safeguards the uninterrupted operation of mission critical IT equipment. Powered by two independent power sources, the STS rapidly switches from one source to the other automatically when the power supply used to power its connected load fails. For datacenter applications the STS allows power drop risk to be shared or distributed to each rack to prevent power loss for the whole system. The STS offers an efficient and reliable switch that supports the high redundancy requirements of mission critical power systems.

Availability

- Adopts SCR design instead of a relay as a switching device to increase reliability and handle high inrush current.
- Supports power redundant configurations for high reliability
- Monitors the health of the power source and performs the transfer automatically
- Short transfer time (6ms)

Convenience

- Rack-mounted type with 1U size for easy installation and relocation
- Built-in SNMP for remote management
- LED indicators show power flow
- Self-test function
- Short MTTR (less than 5 minutes)

Safety

- Break before make prevents short circuits between two sources

▲ Supports redundancy application with higher reliability

Delta InfraSuite Power Management

Static Transfer Switch Series

Technical Specifications

Model	STS30002SR
Capacity	32A
Regulatory	CE / UL
Input	200/208/220/230/240 Vac
Output	200/208/220/230/240 Vac
Display	LED
Connection	Input S1 : IEC309 / L6-30P Input S2 : IEC309 / L6-30P Output : IEC309 / L6-30R
Communication	SNMP
Operating temperature	0~40℃
Storage temperature	15~50℃
Humidity	5%~95% RH (non-condensing)
Audible Noise (at one meter)	<45 dBA
Physical Dimensions (H x W x D)	43mm x 440mm x 355mm
Weight	7.6kg

• All specifications are subject to change without prior notice.

Front

Rear

Delta InfraSuite Rack & Accessories

Modular Server Rack

The modular server rack is essential gear for data centers. Delta has developed a modular server rack that increases space utilization and heat dissipation via 70% perforation to meet high density IT room requirements.

Convenience

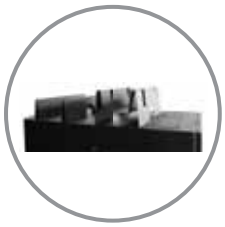
- Tool-less installing and removing & reversing front and rear doors
- Removable power trough on the roof neatly managing power, network and optic cables
- Tool-less removable roof cable ports for easier cable access and management
- Removable bottom cover allowing cable access through raised floor
- Casters for convenient moving
- Quick release half-height side panels with safety lock for easy handling
- Front and rear U-position numbers for easy installation
- Easy to join racks in a row for a clean and secure data room
- Front and rear doors open up to 130º for convenient installation and repair
- Built-in levels for quick and accurate leveling of the rack
- Full range of accessories supporting a well-managed and organized data room

Flexibility

- Split rear doors reducing space required for hot aisles and simplifying maintenance
- Adjustable mounting rails with numbered guides helping adjust depth for different installation needs
- Four multipurpose mounting bays for installing 0U PDU or vertical cable trough
- Fully meeting industry-standard EIA-310 rack requirements

Safety

- Supporting 1420kg static weight, or 1000kg rolling weight
- IP20 environment protection rating
- Adjustable leveling feet for stability and security
- Front and rear doors grounded to the rack
- Front and rear doors, and side panels with locks



Roof Cable Trough

Locking Side Panel

Vertical Position Marks

4 Universal Mounting Brackets

Roof Cable Ports & Covers

Inside Level

Conformance

Protection Rating	IP20
Rack Standards	EIA-310-D
Safe Grounding	UL 60950 (max. 63A)
Environmental	RoHS

Environment

Temperature	Operating: 0 ~ 40˚C Storage: -15 ~ 50˚C
Relative Humidity	Operating: 0 ~ 95%
Elevation	Operating: 0 ~ 3000m

Physical

Item	Model	W (mm)	H (mm)	D (mm)	Packing Dimensions W x H x D (mm)	Net Weight (kg)
1	MSR3140	800	2000	800	830*860*2156	126
2	MSR3120	800	2000	900	830*960*2156	135
3	MSR2120	800(23”)	2000	900	830*960*2156	135
4	MSR3150	800	2000	1000	830*1060*2156	142
5	MSR2150	800(23”)	2000	1000	830*1060*2156	142
6	MSR3110	800	2000	1100	830*1160*2156	150
7	MSR2110	800(23”)	2000	1100	830*1160*2156	150
8	MSR3160	800	2000	1200	830*1260*2156	158
9	MSR2160	800(23”)	2000	1200	830*1260*2156	158
10	MSR1130	600	2000	600	630*660*2156	103
11	MSR1140	600	2000	800	630*860*2156	108
12	MSR1120	600	2000	900	630*960*2156	113
13	MSR1150	600	2000	1000	630*1060*2156	122
14	MSR1110	600	2000	1100	630*1160*2156	137
15	MSR1160	600	2000	1200	630*1260*2156	145

These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

Delta InfraSuite Rack & Accessories

Rack Accessories (600mm Rack)

1U Fixed Shelf

Model	MSR1111
Weight (kg)	7
Dimensions (mm)	W480.5xD664xH44

1U Sliding Shelf

Model	MSR1112
Weight (kg)	9
Dimensions (mm)	W482xD718xH44

Bottom Perforated Cover

Model	MSR1114
Weight (kg)	6.70
Dimensions (mm)	W538xD835.8xH39

1U Blanking Panel

Model	MSR1115 (10 pcs)
Weight (kg)	0.17
Dimensions (mm)	W482.6xH43.7xT1.0

2U Blanking Panel

Model	MSR1116 (10 pcs)
Weight (kg)	0.33
Dimensions (mm)	W482.6xH88xT1.0

Power Trough with Through-hole

Model	MSR1117
Weight (kg)	4.12
Dimensions (mm)	W580xD320xH190

Cable Trough

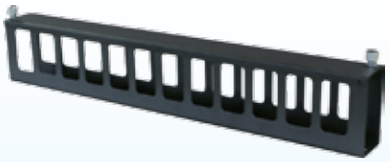
Model	MSR1118
Weight (kg)	1.98
Dimensions (mm)	W580xD75xH125

Cable Trough with Through Hole

Model	MSR1119
Weight (kg)	1.74
Dimensions (mm)	W580xD75xH125

Vertical Cable Management Channel

Model	MSR9001 (2 pcs)
Weight (kg)	1.90
Dimensions (mm)	W53xD63xH888



1U Horizontal Cable Management Channel

Model	MSR9002
Weight (kg)	0.97
Dimensions (mm)	W482xD50xH44

Magnetic Switch

Model	MSR9003
Weight (kg)	0.05
Dimensions (mm)	W45xD33xH50

Cable Ladder (300mm wide)

Model	MSR9005
Weight (kg)	4.54
Dimensions (mm)	W300xD50xH1560

Cable Ladder (150mm wide)

Model	MSR9006
Weight (kg)	3.90
Dimensions (mm)	W150xD50xH1580

Cable Ring

Model	MSR9008 (10 pcs)
Weight (kg)	0.013
Dimensions (mm)	W45xD85xH5

Delta InfraSuite Environment Management System

InfraSuite Manager - Data Center Infrastructure Management (DCIM)

InfraSuite Manager is a Data Center Infrastructure Management (DCIM) system, integrating all facility and IT equipment on one platform simultaneously. The EnviroProbe and EnviroStation work together seamlessly to immediately perform the complete management of energy, power system, cooling, environment, security, asset, server monitoring and more, making it an eternally alert sentry to guard your data center.

Energy Management

Energy consumption classifications are given using the actual device deployment of the data center in real time with historical PUE records to assist the IT manager to analyze and understand the power usage effectiveness of the data center. Customized power consumption management and electricity cost analysis are also available to help you save energy.

Power Management

The status of all electrical equipment used for power - including uninterruptible power supply (UPS), power distribution cabinets (PDC), power distribution units (PDU), and power meters – can be monitored by InfraSutie Manager. The system is also able to handle capacity management, power quality monitoring, power paths, rack current, and server power consumption analysis.

Cooling System Management

The system displays the current status of cooling equipment – including the precision cooling, the chiller, and the cooling tower – together with temperature data and water-leakage alerts. The layout for the data center facility's heat-exchange is displayed in an easy-to-understand fashion by the rack power consumption and cooling capacity data.

Environment Management

Various environmental parameters, including temperature, humidity, water leakage, smoke detection, door contact and more, are collected by the Delta EnviroProbe(EMS1000) and EnviroStation(EMS2000).

Security Management

By combining the camera function, datacenter managers can observe the environment status in the real world remotely. The camera function includes full time recording, event-trigger recording, play back and image/ video back-up. Multiple door access control readers, controllers and user accounts can be integrated to provide the most correct information of in and out times of users.

Asset Management

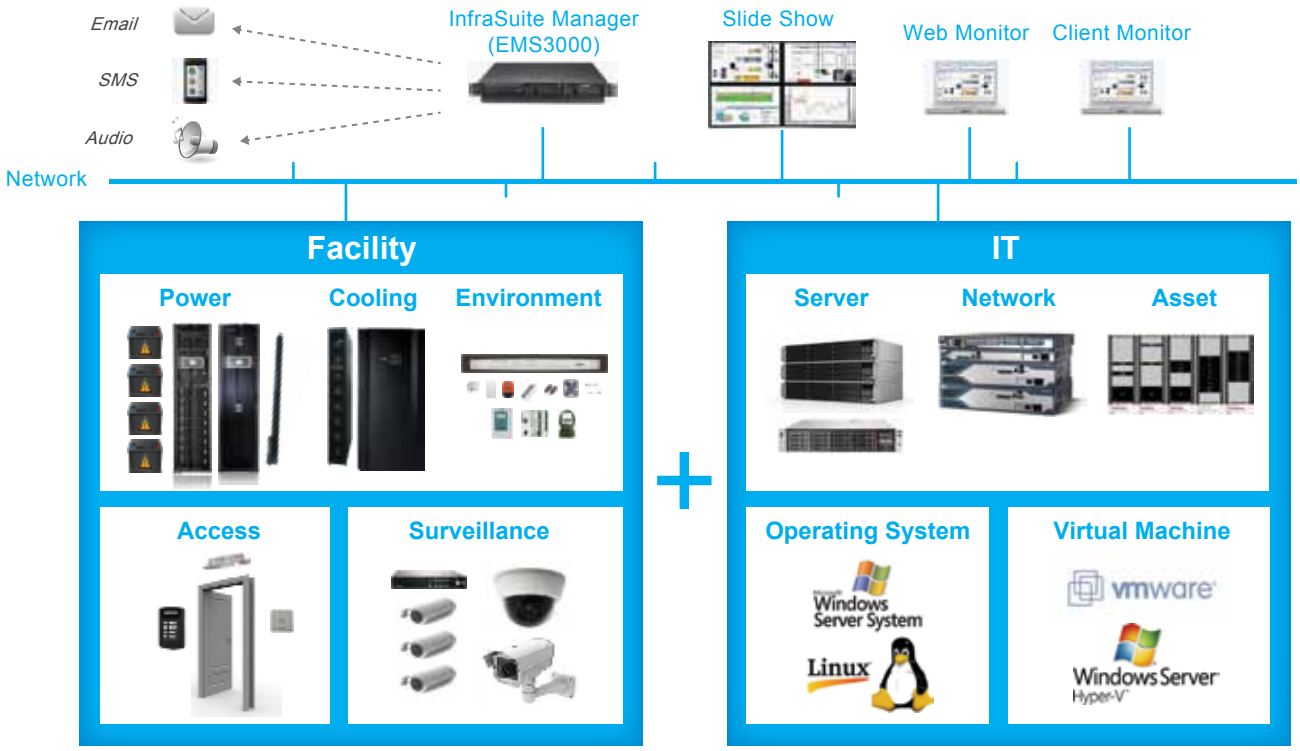
The asset management module displays the correct installation position of servers and network equipment, and also provides capacity analysis, failure analysis, power paths, network topology, asset searching, and event management advice.

Server and Network Equipment Monitoring and Management

This function covers the server and network equipment monitoring, OS shutdown protection and server power capping. To look into the server chassis environment, InfraSuite Manager can communicate with the server BMC to retrieve the power information, PCB thermal sensors, fan speed. In addition, the OOB server power control is also available. InfraSuite Manager integrates with Intel DCM to limit the maximum power consumption of servers. This feature can be used to reduce the heat generated by the servers during emergency to continue the business services.

Powered by Intel® Data Center Manager

InfraSuite Manager Solution is created to extend the function to include all of the devices in the Facilities and IT domains. It can easily integrate with the uninterruptible power supply (UPS), power distribution cabinets (PDC), power distribution units (PDU), modular server racks, precision cooling, generators, and more.



Technical Specifications

	Model	EMS3525035
Hardware	OS Support	Windows XP SP2, Vista, 7, 2003, 2008
	CPU Speed	2GHz
	Memory	4G
	Hard Disk	500G
Interface	Web	HTTP, HTTPS
	Browser Support	IE, Chrome, FireFox, Safari
	Windows Applications	Windows XP SP2 and above

• These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

Delta InfraSuite Environment Management System

EnviroStation

Delta's Environmental Management System (EMS) monitors the environment and conditions in the data center, including temperature, humidity, water leakage, alarms for fire, smoke, and unauthorized entry.

The EMS offers IT managers an integrated platform for more convenient monitoring of today's data center.

EnviroStation integrates the monitoring of the data center's environment and other conditions, and sends the data to a central manager via network. User-defined alarms ensure the data center's security.

Easy to manage

- Assess and collect key data center information for enhanced management
- Real-time notification providing faster management response and more effective operations
- Setting manager password for higher security
- SNMP allowing easy integration with any enterprise management system

Convenience

- Monitoring via internet browser
- InfraSuite Manager remote monitoring software providing prompt handling of any data center situation
- Graphical interface and historical data records for more effective management
- Real-time alarm notifications shortening management response time

Flexibility

- Supports SNMP communication protocol
- Setting each alarm value based on actual requirements

Technical Specifications

Model		EMS2000
Input	Power	100~240 Vac, 50/60 Hz
	Digital Input	Wet Contact Signal • Alarm Voltage 5~24 Vdc, 1-9 mA Dry Contact Signal • Normal: Off (open circuit) • Alarm: On (short circuit)
	Analog Input	Voltage: 0~10Vdc Current: 4~20 mA
	RTD	Range: 0~50°C Accuracy: ± 1°C with 3-wire PT100
	Resistance Temperature Detection (x1)	Support 2-wire or 3-wire resistance
	Leakage	Detect Voltage < 1V (alarm signal with S-1FP leak sensor)
Output	Sensor HUB	For connection with sensor devices (such as smoke detectors, fire detectors, or door sensors, etc) and support: + 12V, 0.8A (max) + 24V, 1.0A (max) One port limit 0.6A
	Delta Bus	+ 12V, 0.8A (max)
	Relay Output	26 Vdc (max), 0.8A (max)
Alert	Warning Light (X1)	Included in the package and can connect to EMS2000 via a Sensor Hub converter (through Port 1 or Port 2) to alert for abnormal conditions.
Network Connection	RJ45 (X1) RS485 (X2) Console (X1)	10/100 Base-T Standard ModBus Connect to PC via RJ-45 to DB9 cable (cable is included in the package) A configuration port is available for the console mode.
Environment	Operating Temperature Storage Temperature Operating Humidity	0~45°C -20°C ~ 60°C 0~ 90% RH (non-condensing)
Dimensions	Product (W x D x H) Package (W x D x H)	440 x 157 x 44 mm 510 x 410 x 150 mm
Weight	Product Package	2.4 Kg 5 Kg

• These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

EnviroProbe

EnviroProbe monitors temperature, humidity in a single cabinet or area and transmits signals from environment sensor devices in the data center (e.g.: door sensors, smoke detectors, fire detectors, water-leakage detectors etc.) to management via network. EnviroProbe also controls its connected devices when equipped with digital and analog outputs, keeping the IT manager promptly informed of all environmental changes by giving alarms, controlling the activation and deactivation of an external device (e.g. a magnetic lock), or by giving a sound alert using its own built-in buzzer upon detection of water leakage.

Easy to manage

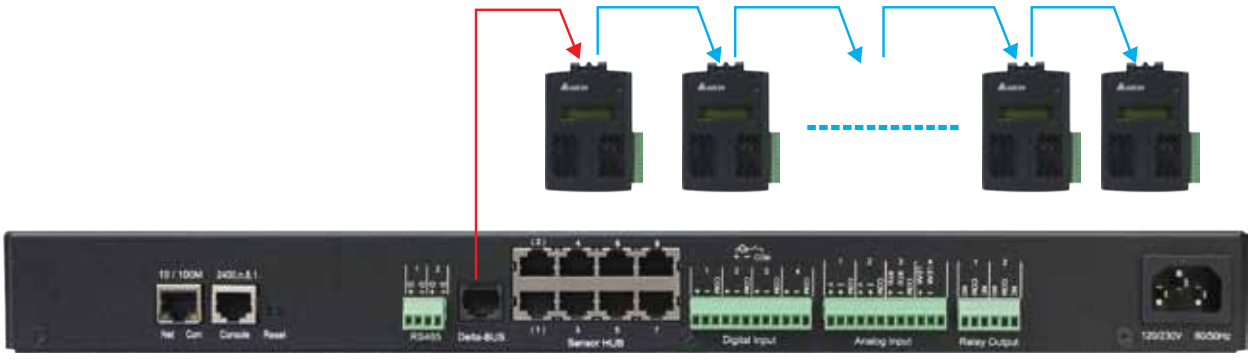
- Monitoring temperature, humidity of the environment
- Backlight LCD display
- Digital/analog inputs and outputs

Convenience

- Work with EnviroStation(EMS2000) to monitor via internet browser
- InfraSuite Manager software for remote monitoring and recording

Flexibility

- Work with EnviroStation(EMS2000) to support SNMP communication protocol
- Cascade EnviroProbes via RS485



Connecting EnviroProbes with EnviroStation can expand the scope of the monitored area.

Delta InfraSuite Environment Management System

EnviroProbe

Technical Specifications

Model		EMS1000	EMS1100	EMS1200
Input Voltage		UPS SNMP card: 12 Vdc (Pin 1 & 4) PDU SNMP card: 5 Vdc (Pin 2 & 4)		
Purpose		To collect data from connected devices (temperature & humidity)	To control connected devices	To collect data from and control connected devices
Input/Output Contacts		4 dry/wet contact inputs	4 digital outputs	2 analog inputs, 1 analog output, 1 water-leakage detection (built-in buzzer)
		Connect to EnviroStation(EMS2000) or SNMP IPv6 card		Connect to EnviroStation (EMS2000)
Input		Wet Contacts:5~24Vdc, 1~8mA; Dry Contacts: Open/Short Status	N/A	Voltage: 0~10Vdc (12bit) Current: 0~20mA (12bit)
Output		N/A	Contact voltage/Contact current/Contact tolerance60Vdc/1A/60W;30Vac/2.08A/62.5VA	Voltage: 0~10Vdc (12bit) Current: 4~20mA (12bit)
Cascade number to EMS2000		Up to 10 units	Up to 4 units	Up to 5 units
Dimensions (WxDxH)		Product: 66 x 30 x 99mm Packaging: 97 x 43 x 110mm	66 x 33 x 103mm 91 x 42 x 113 mm	
Weight		Net Weight: 120g	130g	
		Gross Weight: 140g	150g	
Environment	Temperature	Operation: 0ºC ~ 45ºC		
		Storage: -20ºC ~ 60ºC	Storage: 0ºC ~ 60ºC	
		Accuracy: 15ºC ~ 35ºC : ± 1ºC, 0ºC ~ 15ºC & 35ºC ~ 45ºC: ± 2ºC	N/A	
	Humidity	Operation: 20 ~ 90% RH (no condensation)		
		Storage: 0 ~ 90% RH (no condensation)		
		Accuracy: ± 10% RH	N/A	
	Altitude	0 ~ 10,000 feet		
Conformance		CE		
		EN55022 (CISPR 22) Class B		
		EN55024 (Level 3 @Air 8 KV/contact 4 KV)		

These specifications are subject to change without notice. Please contact us or our distributors in your region for the latest specs.

Delta InfraSuite Precision Cooling

Modern datacenters have implemented a high-density model, mainly based on blade servers, to increase space utilization and accommodate the rapid expansion of new IT equipment. This model requires a higher power supply density and creates bigger heat dissipation problems, where increased power consumption for air conditioning can account for 45% of total data center electricity expenses. With this in mind, heat dissipation and electricity expenses are important indices against which operational expenditures of the data center can be measured.

As a leading global manufacturer of fans and a specialist in power management, Delta Electronics was perfectly positioned to develop Delta InfraSuite precision cooling solutions to meet the needs of modern data centers. Delta's precision cooling enthalpy laboratory carefully verifies cooling performance and reliability during the engineering development and design process to ensure high product performance. The specifications and testing ranges used by the Delta Electronics precision cooling enthalpy laboratory are listed below:

Indoor side

Item	Unit	Range	Tolerance
Air Volume	CMM	50~500	± 3 %
Dry Bulb Temp	°C	0~40	± 0.3°C
Wet Bulb Temp	°C	0~40	± 0.2°C
Relative Humidity	%	30~90	3%
Fluid Volume	LPM	0~500	± 2%
Inlet Fluid Temp	°C	4~4	± 0.1°C
Cooling Capacity	kW	17.5~106	± 2%
Heating Capacity	kW	17.5~106	± 2%
Humidity Capacity	kW	0~60	
Dimension	M	6H×10W×6D	

Outdoor side

Item	Unit	Range	Tolerance
Air Volume	CMM	0~100	± 3 %
Dry Bulb Temp	°C	-25~50	± 0.3°C
Wet Bulb Temp	°C	-25~50	± 0.2°C
Relative Humidity	%	20~90	3%
Fluid Volume	LPM	0~500	± 2%
Inlet Fluid Temp	°C	4~34	± 0.1°C
Cooling Capacity	kW	0~70	± 2%
Heating Capacity	kW	0~70	± 2%
Humidity Capacity	kW	0~60	
Dimension	M	6H×10W×6D	

Delta InfraSuite Precision Cooling

RowCool 29kW, Chilled Water

As the power density increases in modern data centers, traditional precision air conditioning fails to provide complete cooling for the following situations:

- Load variations for peak and off-peak period
- High power density
- Uneven heat distribution

The Delta InfraSuite Precision Cooling RowCool Chilled Water can effectively solve the above problems.

High Availability

- Built-in dual power supply input for better power reliability
- Hot-swappable rectifiers and fans greatly reduce maintenance time
- Panel made of cold-rolled steel plate and coated with surface electrostatic spraying of epoxy is highly resistant to rust
- Built-in leakage detector capable of leak display and alert
- Modular rack design readily scalable by load to enable quick configuration of new cooling units
- Built-in manual dehumidifying for quick and precise dehumidification
- Supporting group control and used as backup

High Flexibility

- Chilled water pipe suitable for both top and bottom insertion, with flexible configuration as required
- Wheels on bottom for easy moving to locations that need cooling
- Disposable filter with high efficiency (MERV 8 ASHRAE 52.2, 45mm); washable MERV 1 filter is optional for further cost savings
- Remote monitoring can be carried out through SNMP card, providing more comprehensive system protection

High Efficiency

- Continuously variable speed fan design for energy saving
- Cooling system capable of variable flow control for energy saving
- Built-in vortex wafer flow meter capable of monitoring chilled water flow that renders easy display of system status

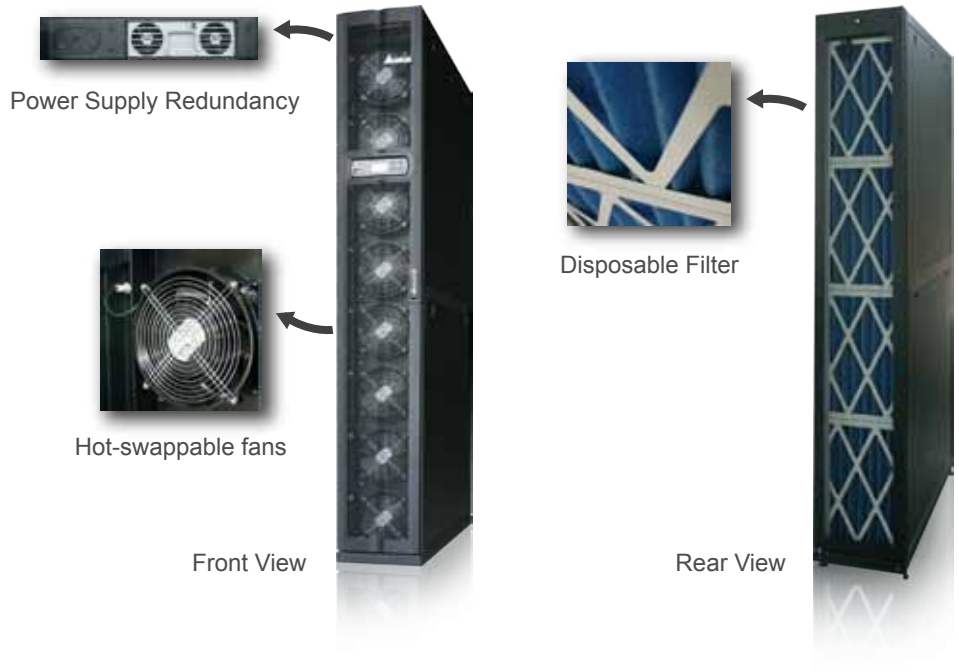
Applications

- High power density rack area
- Environment that requires precise environmental control

Technical Specifications

Model		HCH1850
Cooling method		Chilled Water
Maximum cooling capacity		29 kW
Sensible cooling capacity		28.7 kW
Input power		Single phase 220-240 Vac, 50/60 Hz
Maximum input current		5A
Power consumption		1 kW
Air flow		2900 (4930) CFM (CMH)
Tubing Dimensions		25A (1 inch), PT thread female
Connections of inlet/outlet water		Top and bottom
Filter		30~35 %, MERV 8 (Disposable)
Communication interface		SNMP slot x1 (SNMP card is optional), RS232x1, RS485x1 (Modbus protocol), Input dry contact x2, Output dry contact x2, Temperature sensor x3 , Remote temperature/humidity sensor x1
Accessories		Washable filter
		Remote temperature/humidity sensor, SNMP card, Drain Pump
Environment	Operation temperature	4 ~ 40°C
	Relative humidity	30 ~ 85%, non-condensing
External dimensions	Dimensions (WxDxH) mm	300 x 1090 x 2000
	Weight (kg)	185

Test conditions of total cooling capacity: Return air temperature: 40.6°C DB / 21.6°C WB / chilled water inlet temperature: 7.2°C/ chilled water outlet temperature: 13.8°C
Please contact Delta or a local distributor for new specifications regarding the constant improvements Delta makes for various lines of products



Delta InfraSuite Precision Cooling

RowCool 70kW, Chilled Water

As the power density increases in modern data centers, traditional precision cooling fails to provide complete cooling for the following situations:

- Load variations for peak and off-peak period
- High power density
- Uneven heat distribution

The Delta InfraSuite Precision Cooling RowCool Chilled Water can effectively solve the above problems.

High Availability

- Built-in dual input for better power reliability
- Panel made of cold-rolled steel plate and coated with surface electrostatic spraying of epoxy is highly resistant to rust
- Built-in leakage detector capable of leak display and alert
- Modular rack design readily scalable by load to enable quick configuration of new cooling units
- Built-in manual dehumidifying for quick and precise dehumidification
- Supporting group control and used as backup

High Flexibility

- Chilled water pipe suitable for both top and bottom insertion, with top and bottom input power wiring, providing flexible configuration as required
- Wheels on bottom for easy moving to locations that need cooling
- Disposable filter with high efficiency (MERV 8 ASHRAE 52.2)
- Remote monitoring can be carried out through SNMP card, providing more comprehensive system protection
- Optional reheater and humidifier accessories for more precise temperature and humidity control

High Efficiency

- Continuously variable speed fan design for energy saving
- Cooling system capable of variable flow control for energy saving
- Built-in vortex wafer flow meter capable of monitoring chilled water flow that renders easy display of system status

Applications

- High power density rack area
- Environment that requires precise environmental control

Technical Specifications

Model No.			HCH1CB0	HCH1CB0 with reheater/humidifier
Capacity	Maximum cooling capacity *1	kW	70	70
	Sensible cooling capacity	kW	69.3	69.3
Power	Input power	Φ/Hz/V	3Φ4W+G/50,60Hz/ 380V	3Φ4W+G/50,60Hz/ 380V
	Maximum input power	kW	3	14
	Maximum current	AMP	5	22
Fan	Air flow	CMH (CFM)	11400 (6700)	11400 (6700)
	Type		EC Fan	EC Fan
	Number of fans	n	3	3
Coil	Water flow	LPM	111.2	111.2
Reheater	Capacity	kW(Btu/HR)	N/A	8.1(27600)
	Current	Amp	N/A	12.3
	Stages	n	N/A	3
Humidifier	Capacity	kg/h	N/A	3
	Power consumption	kW	N/A	2.25
	Current	Amp	N/A	3.5
Filter (disposable)	Filter class		30~35% MERV8	30~35% MERV8
Tubing Dimensions	Inlet water	mm(in)	32A(1 1/4") PT thread female	32A(1 1/4") PT thread female
	Outlet water	mm(in)	32A(1 1/4") PT thread female	32A(1 1/4") PT thread female
	Drain pipe	mm(in)	20A (3/4") PT thread male	20A (3/4") PT thread male
	Humidifier supply water	mm(in)	N/A	10A (3/8") PT thread male
	Connections of inlet/outlet water		Bottom/ Top(optional)	Bottom/ Top(optional)
	Power Wiring		Both at top and bottom	Both at top and bottom
Communication Interface			SNMP slot x1 (SNMP card is optional), RS232x1, RS485x1 (Modbus protocol), Input dry contact x2,Output dry contact x2, Temperature sensor x3, Remote temperature/humidity sensor x1	
Accessories			SNMP card, Connection tube for top tubing, Humidifier accessory kit, Reheater accessory kit, Remote temperature/humidity sensor, Drain Pump, Washable filter	
Physical	Height (wo/w packaging)	mm	2000 / 2220	
	Width (wo/w packaging)	mm	600 / 764	
	Depth (wo/w packaging)	mm	1090 / 1342	
	Weight (Gross / Operating)	kg	368 / 414	

Please contact Delta or a local distributor for new specifications regarding the constant improvements Delta makes for various lines of products

1. Testing standard of cooling capacity at 60Hz

Returned air	40.6°C (DB) / 21.6°C(WB)
Incoming chilled water temperature	7.2°C
Temperature difference of inlet and outlet chilled water	8.8°C

2. Reference for cooling capacity testing: ASHARE 127 and GB/T 19413-2003

3. Operation conditions: inlet water temperature 5~15°C, return air temperature 4~40°C DB, 30~85% non-condensing

4. Specifications are subject to change due to constant product updates

Protect Your

The **DPS Series UPS** safeguards one of the largest fixed line operators in Poland.

The **DPH Series UPS** secures one of the major railway upgrade projects in Germany.

The DPH & NH Plus Series UPSs provide continuous power to one of the largest telecom operators in Spain.

The **NT Series UPS** powers a world-leading consumer goods company in Brazil.

The **DPH Series UPS** ensures operations for one of Angola's largest datacenters.

The **GAIA Series UPS** secures the operations for one of the major governmental datacenters in South Africa.

The **DPH Series UPS** provides continuous protection to a major airport in Poland.

The **G** ensur a lead

Critical Operations 24/7

GAIA Series UPS
es the operations of
ing bank in Poland.

The **DPS Series UPS** protects one of Russia's most advanced medical healthcare centers

The **NT Series UPS** secures power to the most advanced datacenter in Russia.

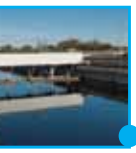
The **InfraSuite Datacenter Solution** ensures the continuous operations of China's most modern TV tower.

Delta's **UPS and Precision Cooling** products protect the leading semiconductor foundry in Taiwan.

The **InfraSuite Datacenter Solution** safeguards the datacenter of a major university in Taiwan.

The **NH Plus Series UPS** provides continuous power to one of the largest manufacturers in Thailand.

The **N Series UPS** safeguards one of the largest city monitoring operators in Thailand.



The **NT Series UPS** powers a major water utility in Australia.

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